

The pros and cons of screening women over 70 years

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Why is screening women over 70 attractive?

- Women over 70 have a high incidence of breast cancer
- Breast density is low
- Mammographic sensitivity is high
- Mammographic specificity is high

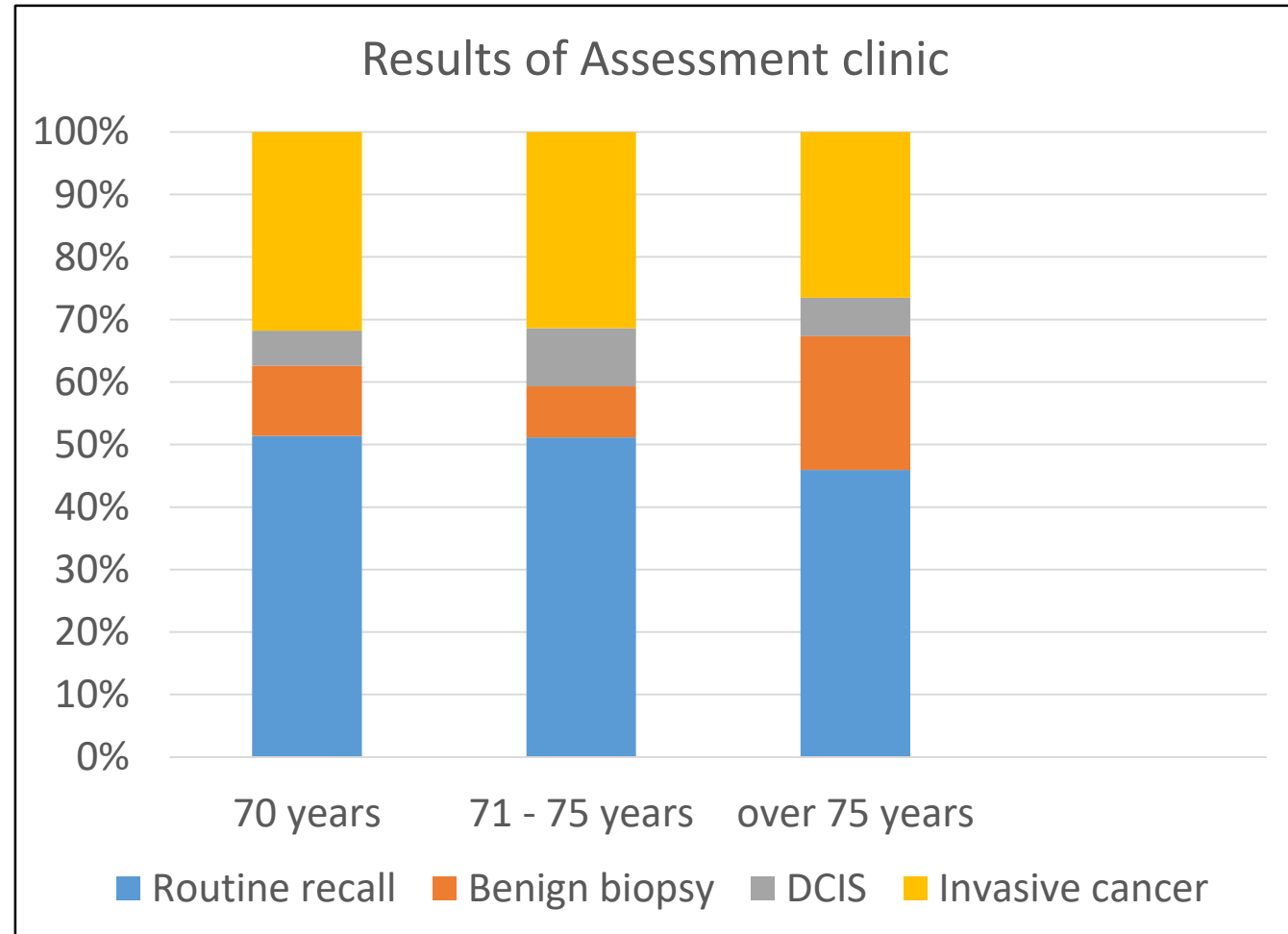
Radiologists love it!



Tayside Screening data in women over 70 yrs

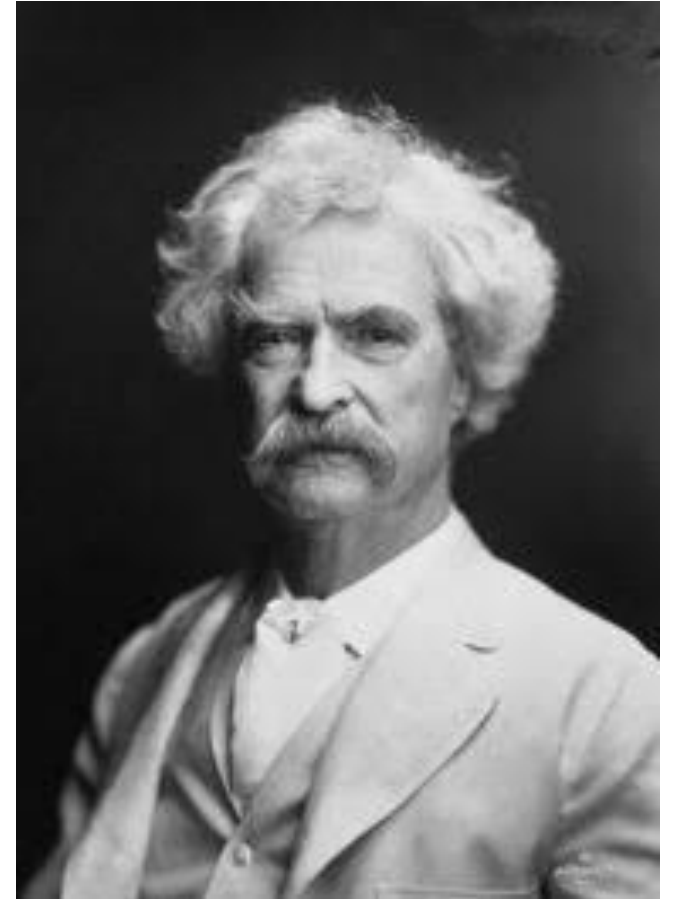
- 8126 women aged ≥ 70 years;
- Similar recall rates: 3.2% - 4.2%
- Of those assessed $\sim 50\%$ had invasive procedure
- Cancer detection rates

	Invasive	
• 70yo:	12.8/1000	10.9/1000
• 71-75yo:	13.1/1000	10.1/1000
• >75yo:	14.2/1000	11.2/1000



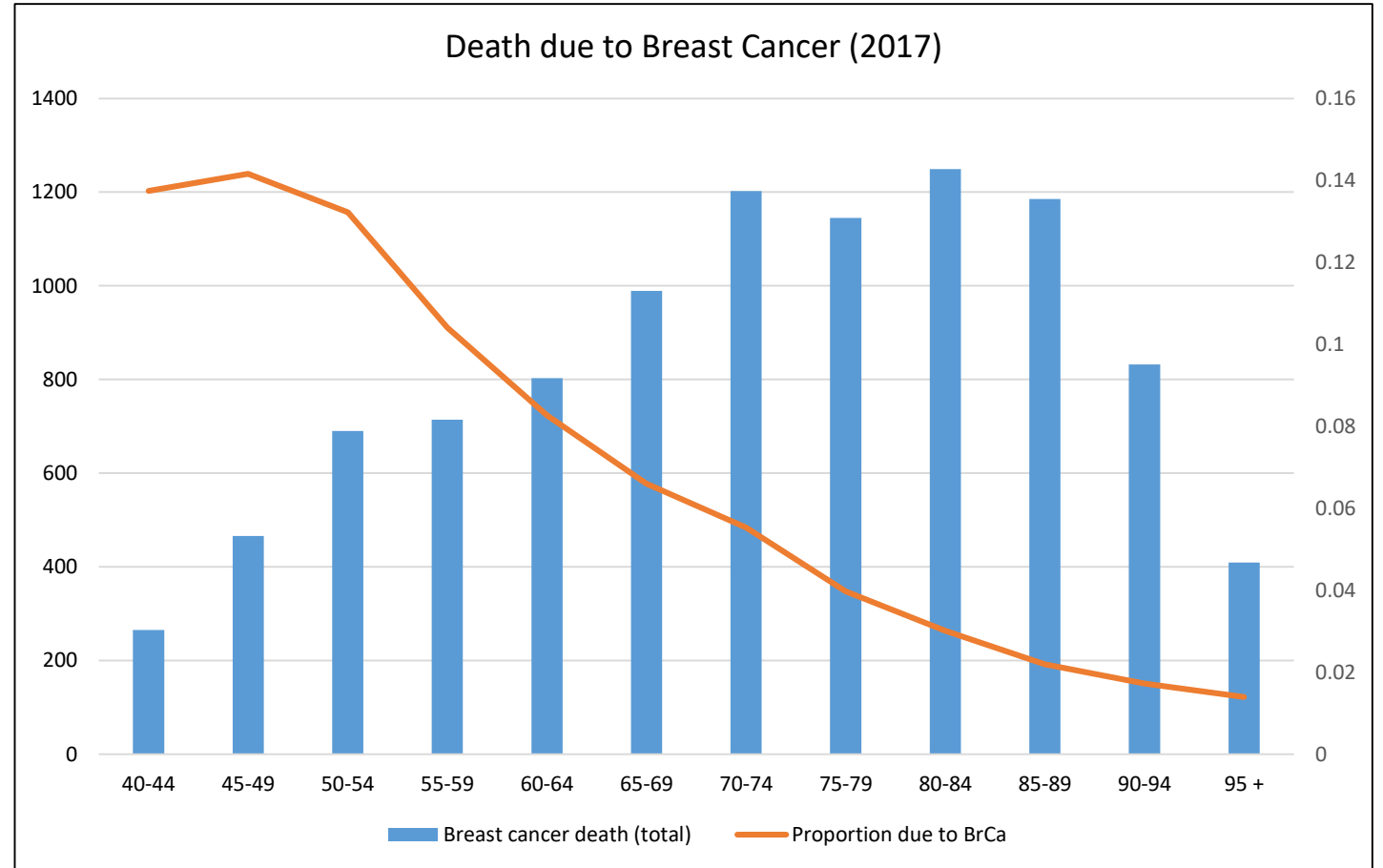
To a man with a hammer:
everything looks like a nail

Mark Twain



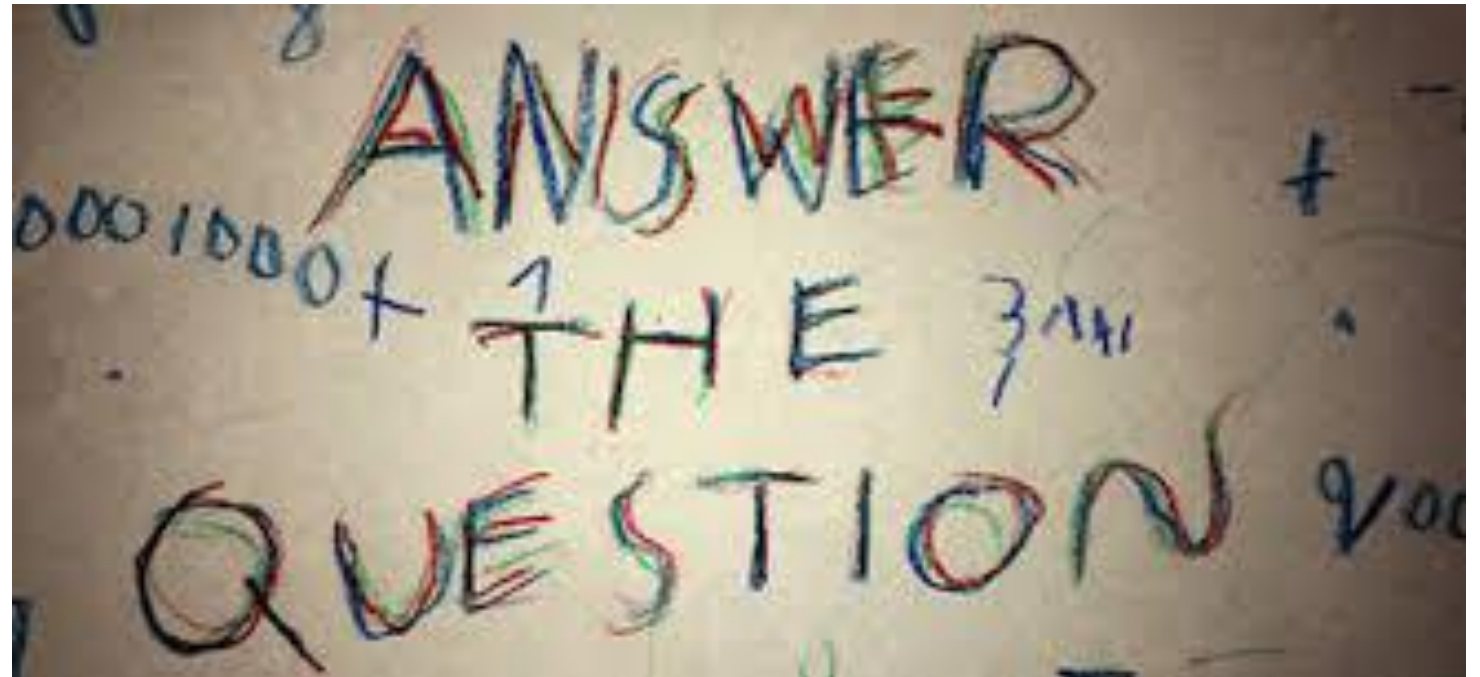
breast cancer deaths in the population by age

- Office of National Statistics 2017 (England and Wales)
- **Frequency** of death due to breast cancer **increases** with age
- BUT...
- **Proportion** of death due to breast cancer **decreases** with age



What are the correct questions to ask?

- Will it do any good?
- Will it do any harm?



Swedish overview

Nystrom et al Lancet 2002;359:909-919

Mortality Results by 5 year age bands

Age	RR	95%CI
40-44	0.85	0.59-1.23
45-49	0.78	0.59-1.04
50-54	0.95	0.72-1.25
55-59	0.76	0.59-0.98
60-64	0.68	0.50-0.92
65-69	0.69	0.49-0.96
70-74	1.18	0.71-1.97

Service screening with mammography in Northern Sweden

Jonsson H, Bordas P, Wallin H, Nystrom L, Lenner P

J Med Screen 2007;14:87-97

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Methods

- Two counties which invited women aged 40-74 were compared to two counties who began screening seven years later
- 109,000 in study group
- 77,000 in control group
- Cohorts were followed for 11 years

Service screening with mammography in Northern Sweden
Jonsson H, Bordas P, Wallin H, Nystrom L, Lenner P
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Results

Age	RR	95%CI
40-49yrs	0.64	0.43-0.97
50-69yrs	0.70	0.54-0.91
70-74yrs	1.08	0.58-2.03

Screening women over 70

- Decreased life expectancy
- Less aggressive tumours
- Less masking by breast density

Leads to

- More over diagnosis

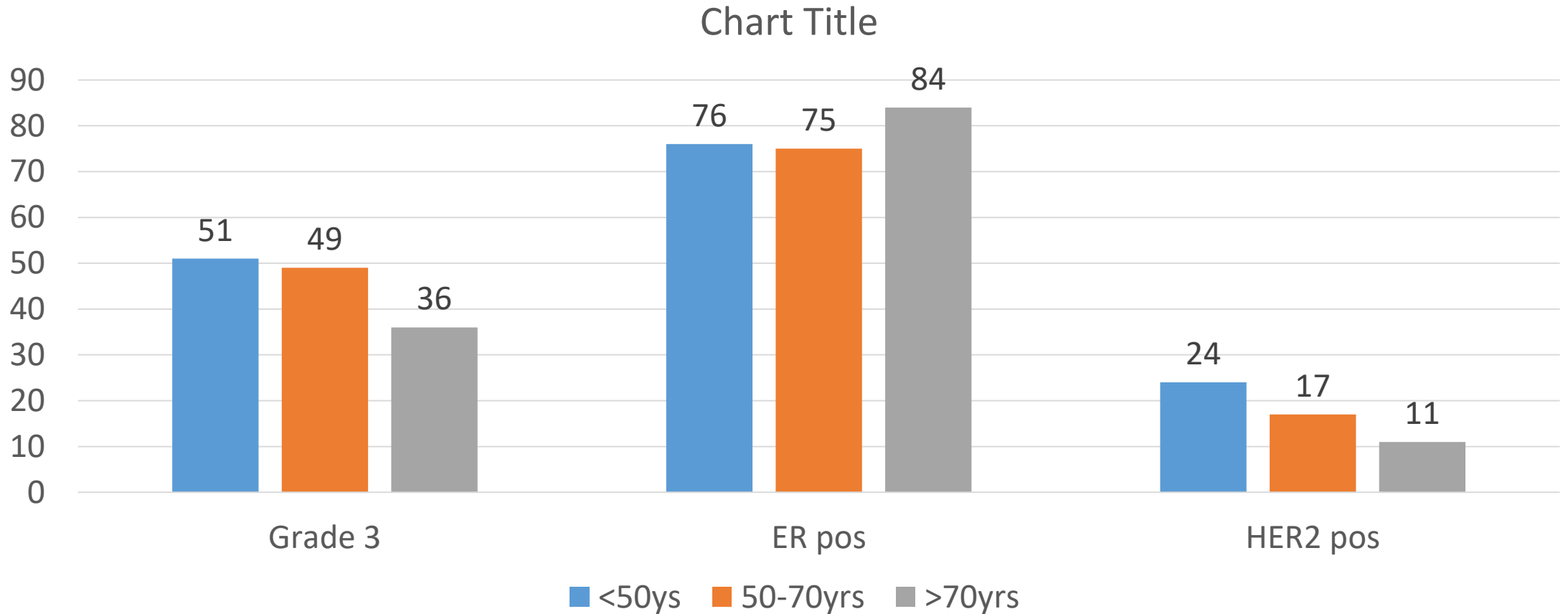
Pathology of breast cancer in older women

- Less basal phenotype
- Lower grade
- More ER positivity
- More PR positivity
- Less HER-2 positivity



Breast Cancer Pathology by Age

1458 Symptomatic women in Tayside



Change in health-related quality of life in older women after diagnosis of a small breast cancer

Euhus DM et al Cancer Feb 2019

- Compared changes in HRQOL measured by either the Medical Outcomes Study 36-Item Short Form (SF-36) or the Veterans Rand 12-item Health Survey (VR-12)
- 198 women diagnosed with in situ or invasive breast cancer measuring ≤ 1 cm
- 36,814 matched controls from the SEER cancer registry linked with the Medicare Health Outcomes Survey

Change in health-related quality of life in older women after diagnosis of a small breast cancer

Euhus DM et al Cancer Feb 2019

- mean age of cases and control 75 years
- On multivariable analysis, diagnosis of a small breast cancer was found to be one of the strongest predictors of a significant decrease in both the physical and mental domains of HRQOL (P = .012 and P = .023, respectively)
- Receiving the diagnosis of even a very small breast cancer significantly impacts the physical and mental domains of HRQOL in older women

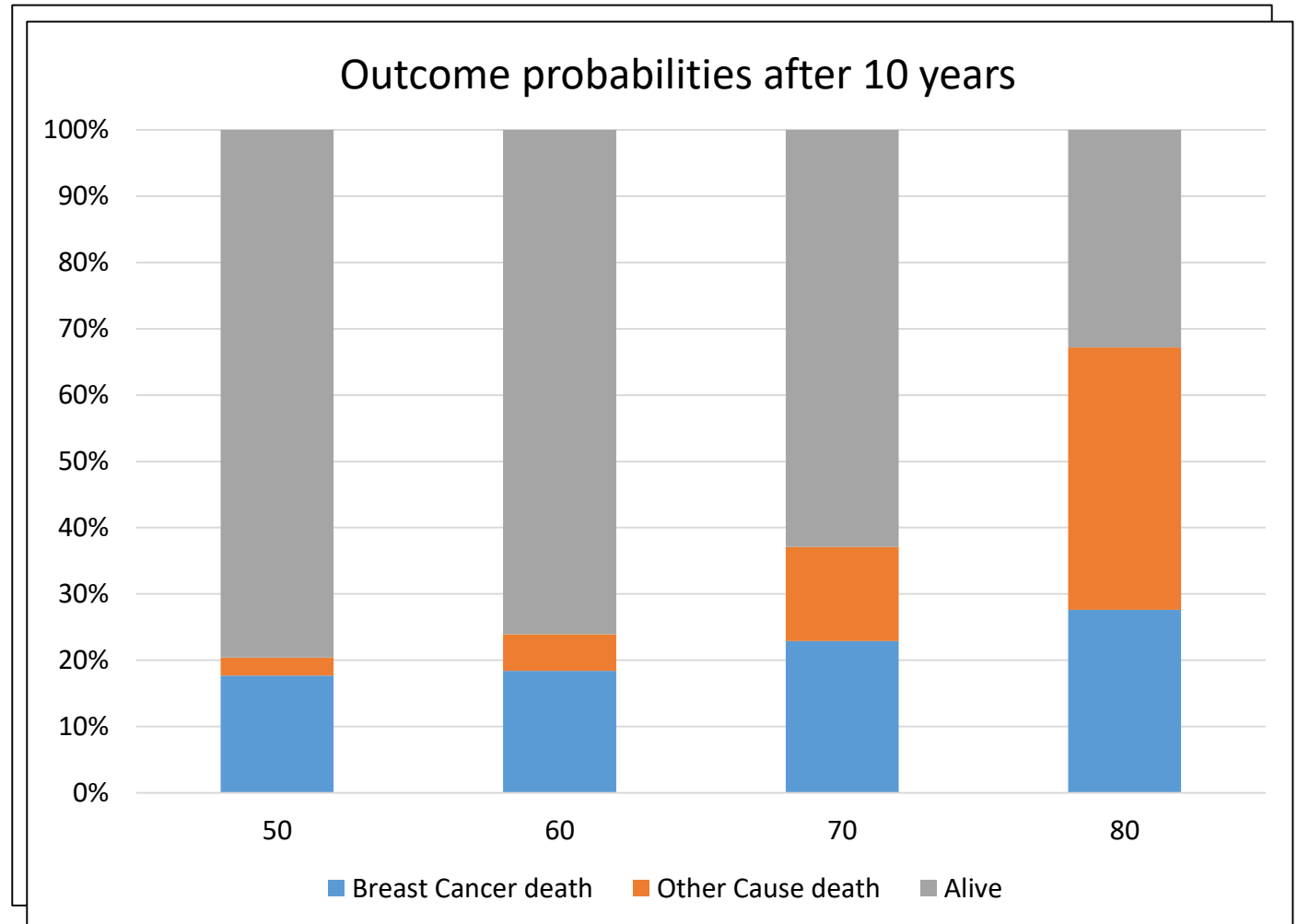
Perceptions of over-detection of breast cancer among women 70 years of age and older in the USA: a mixed-methods analysis

Pappadis et al. BMJ Open 2018

- Many older women did not understand the concept of over-detection, in addition to being suspicious of or resistant to the concept
- Providing older women with descriptions of over-detection may not be sufficient to influence screening intentions

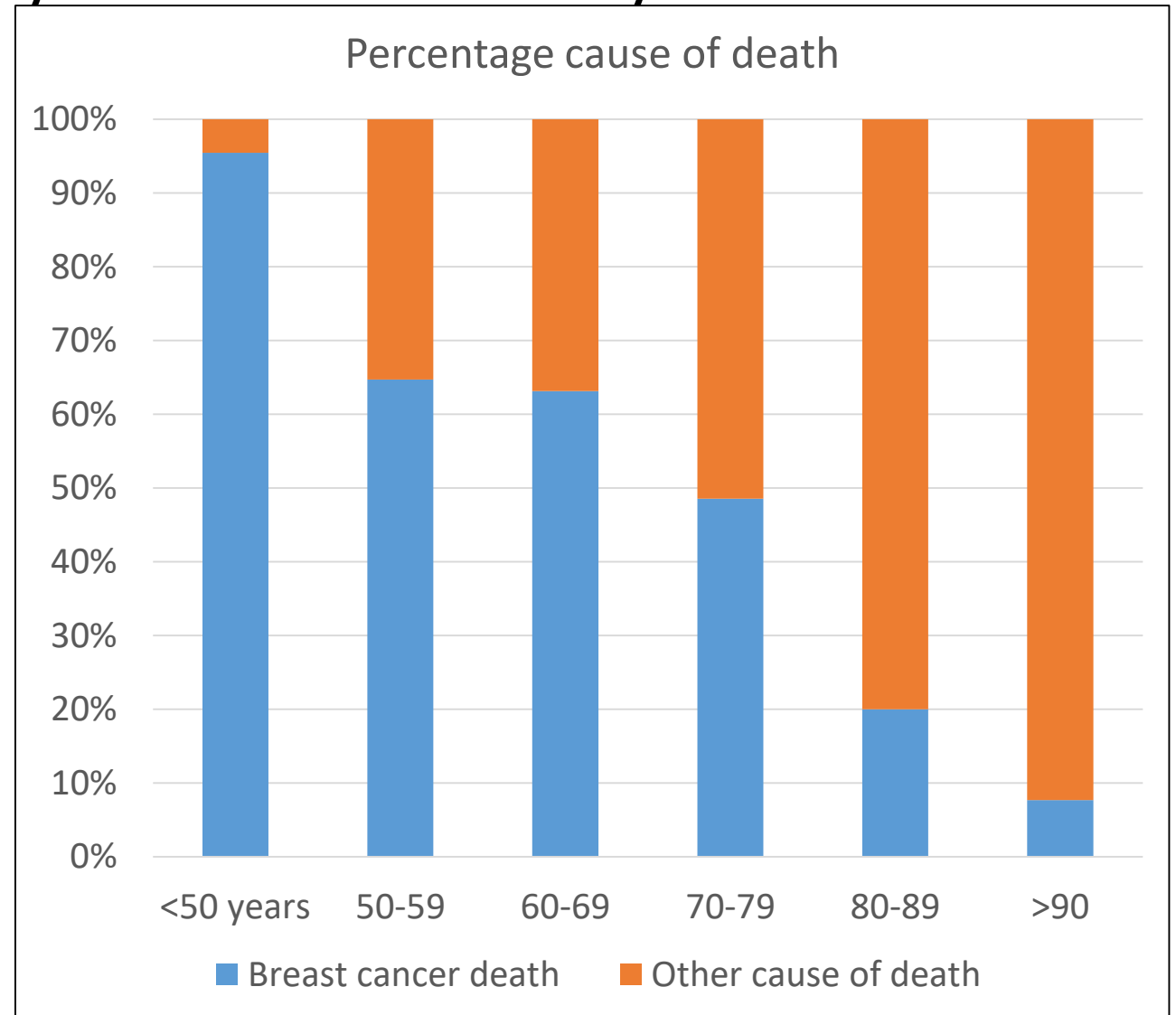
breast cancer deaths in patients with breast cancer

- Charvat et al. Cancer Epidemiology: 2013; 857-863
- French network of cancer registries
- Estimates of crude probabilities of death due to breast cancer in breast cancer population
- Probability of **death from other causes increases with age**



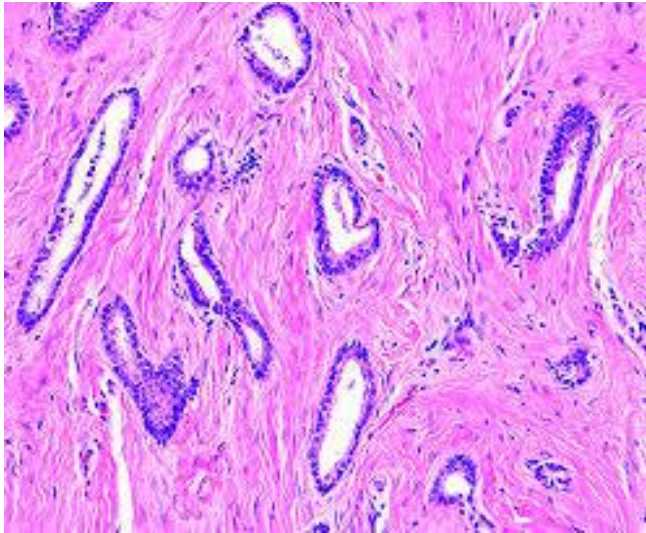
Symptomatic mortality data from Tayside

- Across all ages: 679 symptomatic, invasive cancers.
- 101 deaths
- Mean follow-up: 5.2 years



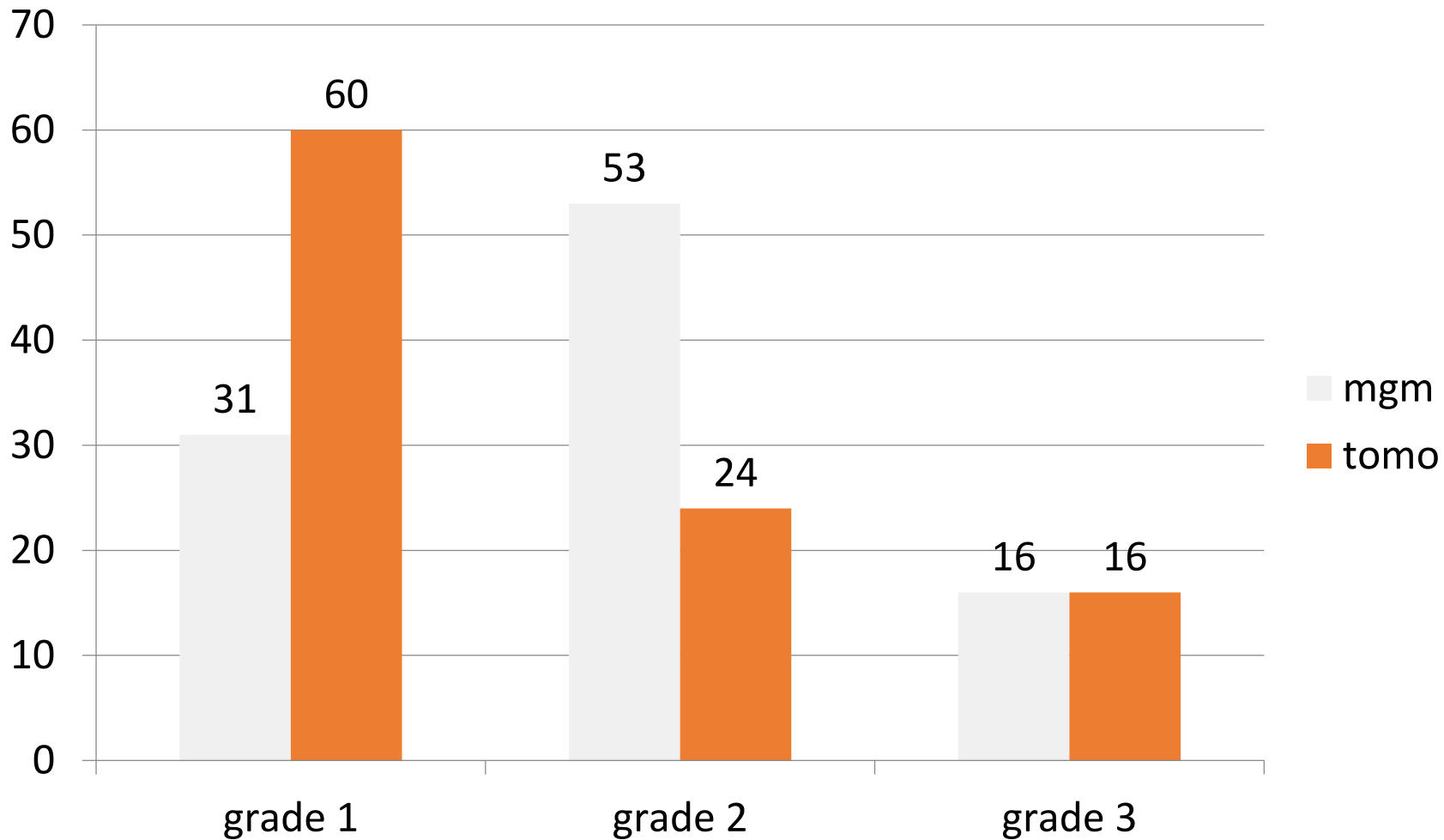
Over treatment of indolent disease

- Tubular cancer never kills anyone
- Commoner in older women who are screened
- Still treated with surgery and whole breast RT



Screening tomosynthesis: distribution by grade

Per Skaane et al Radiology 2013;267:47-56



UK trial

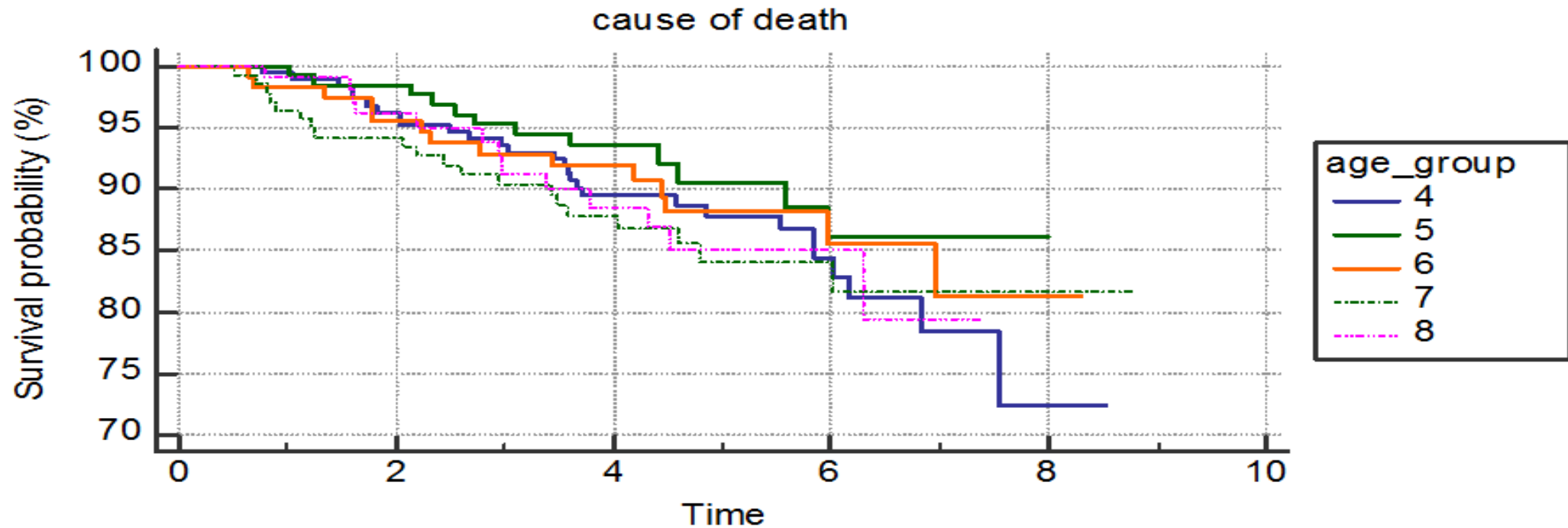
- Women aged 70-73 in whole of England and Wales have been randomised by GP practice to be screened or not screened
- We should wait for the results of this trial before offering routine screening to women aged 70-74

Should women aged 70-74 be invited to participate in screening mammography? A report on two Australian community juries

Degeling et al BMJ Open 2018

- Preventive programmes such as mammography screening are likely to have significant symbolic value once they are socially embedded
- Arguments for programme de-implementation emphasising declining benefit because of limited life expectancy and the risks of overdiagnosis seem unlikely to resonate with healthy older women

Breast cancer mortality in women with symptoms by age in Tayside



Number at risk

Group: 4

191 180 141 59 5 0

Group: 5

133 128 80 37 1 0

Group: 6

119 106 83 35 3 0

Group: 7

141 129 88 35 6 0

Group: 8

120 91 57 17 0 0

Screening women over 70

- Will it do any good? We don't know, but unlikely
- Will it do any harm? For sure

After a certain level of investment the health gain may start to decline:
The point of optimality

